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ABSTRACT

Oximes of isoxanthohumol (IXN), naringenin (N) and flavanone (FL) were synthesized with yields of 88-95% and their antioxidant activity was evaluated using the 1,1-diphenyl-2-picrylhydrazyl radical (DPPH) method. Although naringenin oxime (NOX) and flavanone oxime (FLOX) did not have any significant antioxidant effect (EC_{50} = 2.21 mM and 78.7 mM, respectively), isoxanthohumol oxime (IXNOX) showed a strong antioxidant activity (EC_{50} = 0.0411 mM), comparable to the activity of ascorbic acid (EC_{50} = 0.0181 mM). The structure of new compound IXNOX was established using ^{1}H NMR, ^{13}C NMR, IR and UV-VIS spectroscopy, by comparison to IXN, NOX and FLOX.

Keywords: isoxanthohumol oxime, antioxidant activity, DPPH method, synergism, NMR-IR-UV spectra

1. Introduction

Hops are a very rich source of many prenylated chalcones and flavanones. The most important are: xanthohumol (XN), isoxanthohumol (IXN) and its demethylated form 8-prenylnaringenin (8PN). XN is accessible from carbon dioxide extracted spent hops, where its content ranges up to 1% of dry matter [1]. 8PN can be easily obtained from XN *via* IXN [2]. In recent years these three compounds have played an important role in pharmacognosy due to their anti-cancer and antioxidant activity [3]. On selected markets there are available nutraceutical products enriched in xanthohumol. 8PN is the strongest phytoestrogen known in the nature, having higher activity than genistein and isoflavones of soy [4,5]. It is present as an active ingredient in several natural formulas based on hop extracts, used against menopausal discomforts. Also IXN possess such an activity, although lower than 8PN, because it is transformed into 8PN by intestinal microbiota [6]. In the last two years there has